

1. If $f(x) = \sqrt{x-5}$, $x \geq 5$, what is $f^{-1}(x)$?

$$y = \sqrt{x-5}$$

$$y^2 = x-5$$

$$y^2 + 5 = x$$

$$\text{So: } f^{-1}(x) = x^2 + 5$$

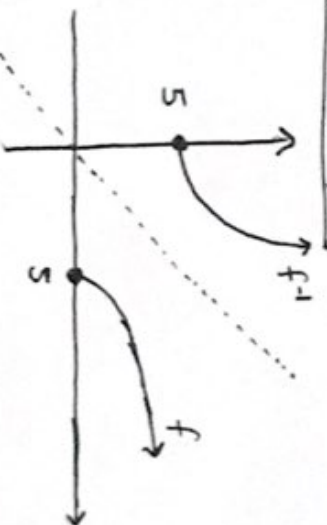
What is the domain of $f^{-1}(x)$?

$$\text{Domain } f^{-1}(x) = \text{Range } f(x)$$

$$= \text{Range } \sqrt{x-5}$$

$$= [0, \infty)$$

Sketch f and f^{-1}



2. If $\log_b(x) = 5$ and $\log_b(y) = 0.52$, find $\log_b\left(\frac{\sqrt[4]{x}}{y^3}\right)$.

$$\log_b\left(\frac{\sqrt[4]{x}}{y^3}\right) = \log_b(x^{1/4}) - \log_b(y^3)$$

$$= \frac{1}{4} \log_b(x) - 3 \log_b(y)$$

$$= \frac{1}{4} \cdot 5 - 3 \cdot (0.52)$$

$$= -0.31$$